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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,327	02/28/2002	Yasushige Nakamura	000738a	8134

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EXAMINER

RODEE, CHRISTOPHER D

ART UNIT PAPER NUMBER

1756

DATE MAILED: 12/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/084,327

Applicant(s)

NAKAMURA ET AL.

Examiner

Christopher D RoDee

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9,13-16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9,13-16 and 18-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 9, 13-15, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horikoshi *et al.* in US Patent 5,618,648 in view of Nagase *et al.* in US Patent 6,194,115 further in view of JP 5-107805 and the admitted art.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horikoshi *et al.* in US Patent 5,618,648 in view of Nagase *et al.* in US Patent 6,194,115 further in view of JP 5-107805 and the admitted art as applied to claims 9, 13-15, 19, 20, and 21 above, and still further in view of Inaba *et al.* in US Patent 5,741,617.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horikoshi *et al.* in US Patent 5,618,648 in view of Nagase *et al.* in US Patent 6,194,115 further in view of JP 5-107805 and the admitted art as applied to claims 9, 13-15, 19, 20, and 21 above, and still further in view of *Handbook of Imaging Materials* to Diamond, pp. 201-202.

These rejections were presented in the last Office action. No amendments have been presented to change the scope of the claims from their condition at the time of the last Office action. This is contrary to the statement at response page 5, which states that the claims are "herein amended". Applicants summarize the rejections on pages 2 and 3 of the response and provide a detailed traversal of the rejections on pages 3 through 5. Applicants have argued the rejections together, specifically with respect to the Horikoshi reference, which is the primary

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reference in each rejection. The Examiner will address applicant's remarks in a similar cumulative manner.

In their traversal applicants state that the instant invention is directed to the characteristics of reducing the components in the toner having low molecular weights, as specified in claim 9. Applicants disagree with the Examiner's characterization of Horikoshi as providing motivation to minimize the amount of low molecular weight components in the toner. Applicants note that Horikoshi discusses in column 2 states,

"as one of the important characteristics of the toner for flash fixing, the binder resin constituting the toner must melt rapidly in the course of fixing to paper and the like and after it is cooled and solidified, should show good fixation. In order to obtain such a toner property, a polymer having a low molecular weight and a low melt viscosity, generally called an oligomer (for example, having a number average molecular weight  $M_n$  of less than 1500 and a weight average molecular weight  $M_w$  of 10,000 or less) is widely used."

Based on this disclosure applicants take the position that the reference teaches that low molecular weight components should be included in the flash fixing toner of Horikoshi. Applicants note that Horikoshi discloses various problems with low molecular weight polymers but there is no suggestion, according to applicant, to limit the low molecular weight components in the toner. Applicants state that Horikoshi teaches that it is possible to use low molecular weight polymers and avoid the problems faced by the prior art. See response p. 4. Horikoshi teaches that the binder polymer can have a  $M_n$  of 5000 or less,  $M_w$  of 20,000 to 200,000, and  $M_p$  of 3000 or more. As applicant's remarks are understood to argue, none of this teaches restricting the components having molecular weights of 500 to 1000 (response p. 5). Further, applicants note that unreacted polyester forming components, such as succinic acid and aliphatic dicarboxylic acid, and benzene from charge control agents do not have molecular weights in the specified range.

The Examiner has given careful consideration to applicant's remarks. The Examiner has reviewed the passage in column 2, referenced in applicant's remarks and repeated above. This passage does state "a polymer having a low molecular weight and a low melt viscosity, generally called an oligomer (for example, having a number average molecular weight  $M_n$  of less than 1500 and a weight average molecular weight  $M_w$  of 10,000 or less) is widely used." Horikoshi continues in the next sentences (col. 2, l. 54-67),

"However, since the oligomer has a low molecular weight, the glass transition point is low and therefore, there arise problems such that (1) the storage stability of toner is low, (2) blocking of toners readily occurs in a developing machine, (3) the toner is readily fused in a developing machine or a fused product (such as coarse toner) is easily formed and (4) the toner properties are liable to alter due to a change in the operating environment of the apparatus (e.g., temperature or humidity). The reason why many problems described above are caused when an oligomer having a low molecular weight is used is that if the molecular weight is made low to give the binder a low melting point, the glass transition point is also lowered, often to the room temperature level."

The reference clearly recognizes problems with the low molecular weight components because it gives a low glass transition temperature to the polymer. This  $T_g$  results in a problem with storage stability as well as the other factors noted. In order to solve these problems and maintain flash fixability the reference teaches the necessity of optimizing the  $T_g$  and melting point of the binder (col. 3, top). This is achieved by increasing the molecular weight of the polymer.

In more detail, the reference teaches that the binder should preferably have  $M_n$  of 4000,  $M_p$  of 4000, and  $M_w$  of from 30,000 to 150,000 (col. 7, l. 33-43). The toner having these characteristics will give good storage stability, low odor from fixing, and ensure flash fixing (col. 8, l. 22, and 55-64).

It is readily apparent that the binder polymer of the invention has higher Mn, Mw, and Mp values (col. 7) than those disclosed for the prior art (col.2). This disclosure of preferred molecular weight characteristics higher than the prior art combined with recognition in the reference of problems with polymers having these lower molecular weights provides a teaching and motivation for the person having ordinary skill in the art to minimize the presence of the low molecular weight components in the binder polymer. Specifically, the inventive polymer has a preferred Mn of 4000 while the prior art polymer has Mn of 1500 or less. A polymer with Mn of 1500 or less would be expected to have a significant number of components at Mn or below while a polymer with Mn and Mp of 4000 would be expected by the skilled artisan to have far less components in the range of 1500 or less. The reference clearly teaches away from the inclusion of low molecular weight components having molecular weights of 1500 or less because they introduce those deleterious properties noted in column 2. The reference clearly motivates the artisan to minimize these low molecular weight components in order to enhance storage stability, reduce fixing odor, and achieve void resistance while producing a toner effective for flash fixing (col. 8, l. 59-64).

Applicants' remarks on page 5 concerning specific acids and residual materials from charge control agents (e.g., benzene) are noted, but the fact that these materials are not within the claimed range does not lessen the overall motivation provided by Horikoshi to minimize materials that would produce the deletrious characteristics in prior art. Certain low molecular weight components are desired in the reference (e.g., charge control agents), but oligomers that have molecular weights lower than those of the preferred molecular weights of Horikoshi are specifically identified as causing imaging and process problems.

The rejections are still seen as proper and are maintained.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.



**CHRISTOPHER RODEE  
PRIMARY EXAMINER**